otherwise the scalding water will be cooled too much; then dip it in a large vessel containing water heated to not less than 132° and not exceeding 135°. Shake or stir it thoroughly, so that the water will reach every grain. Remove the basket occasionally, and add boiling water until the temperature is brought up to the proper point. Keep it in hot water fifteen minutes, then spread out to dry. If this work is thoroughly done, the smut-spores will be destroyed without any injury to the wheat.

DRIED BREWERS' GRAINS.

THE dairymen of our larger cities and towns who live in the neighborhood of large brewing establishments have long recognized refuse brewers' grains as excellent food for milch cattle.

In brewing, says Mr. William Frear, in Bulletin No. 12 of the Pennsylvania State College Agricultural Experiment Station, the barley is first started to germinating, by which most of the starch is changed to maltose, a soluble compound related to sugar. At the proper stage germination is arrested by drying the grains; and the sprouts, which would impart undesirable qualities to the "wort," are removed by stirring and screening. The maltose is then extracted from the grain by hot water to form the wort, or liquid in which alcoholic fermentation is to be set up. The grain left after the wort is drawn off is known as "brewers' grains."

It is a very watery material, expensive to carry great distances, and difficult to preserve, being highly fermentable. Since, however, it contains nearly all of the nitrogenous matter of the original grain, with a much smaller percentage of starch, it forms, in spite of its watery condition, a very important cattle-food.

It has heretofore been found difficult to dry it economically, so as to make its preservation and transportation possible. Recently the Pabst Brewing Company of Milwaukee, Wis., have dried the grain at a low temperature by means of a vacuum process, and without the removal of the last traces of wort by pressure.

An analysis shows that out of the 21.50 per cent of proteine, 17.44 per cent consists of true albuminoids. Careful tests showed no traces of sugar left in the grains, and only 3.17 per cent of starch.

In composition it lies, in most respects, between linseed-meal and wheat-bran, save that it has nearly twice as much fibre. Malt sprouts are somewhat more highly nitrogenous, and contain only about half as much fibre, but they contain only one-ninth as much fat, which, in this case, is probably very largely digestible and of high nutritive value.

If placed upon the market at such a price as to compete with other foods of its class, it will undoubtedly, according to Mr. Frear, prove a valuable addition to the list of highly nitrogenous by-products useful as cattle-foods.

NOTES AND NEWS.

THERE is some difference of opinion as to the original meaning of the word "kangaroo." At the meeting of the Linnean Society of New South Wales on Aug. 27, says *Nature*, the question was discussed, whether, in the dialect of the blacks of the Endeavour River, the word signified "I don't know," and was so used in answer to the queries of Capt. Cook's party, or whether, as Cook supposed, it really was the name of the animal in use among the aborigines of the locality.

—Mr. Cecil Carus-Wilson writes to *Nature* that he has invented a luminous crayon for the purpose of enabling lecturers to draw on the blackboard when the room is darkened for the use of the lantern. He hopes that the invention may prove of value not only to lecturers who use a lantern, but also (in another form) to those students who wish to take notes.

— In a long series of articles a native Japanese paper gives some interesting figures about the students of Tokio (republished in *Nature*). There are 107,312 students in the whole empire in the various colleges and other high schools (primary schools and ordinary middle schools excepted). Of this number, 38,114 represent students prosecuting their studies in the capital; that is to say, about 40 per cent of the whole number are congregated in Tokio. Among the 38,114 students, 6,899 are domiciled in Tokio, so that the number of those coming from other localities is 31,215. The amounts which individual students spend vary from $7 or $8 to about $15 per month. Taking the average, it may be assumed that each student spends $10 a month, or $120 a year. Thus the total amount of money annually disbursed by these lads is a little over $3,700,000. In other words, money aggregating over three millions and a half is being yearly drawn from the provinces to the capital through this channel. The provinces receive little in return, for few of the students ever go back to their homes, their sole ambition being to remain in the capital, and there rise to eminence in some walk of life.

—Since the preparation of the article by Professor Angelo Heilprin in *Science* of Nov. 7, Mr. Israel C. Russell has made a preliminary report on his researches (in conjunction with Mr. Kerr) in the St. Elias region,—researches undertaken under the auspices of the National Geographic Society. The measurements of Kerr, as reported at length in some of the daily papers, give for the height of St. Elias *less than* 15,000 feet, which thus places Orizaba pre-eminently to the first place among North American mountains.

—At a meeting of the executive committee of the National Electric Light Association held at the Electric Club, New York City, Nov 7, the date for holding the thirteenth convention was fixed for Feb. 17, 18, and 19, 1891. Eugene F. Phillips of Providence, where the convention will be held, was appointed chairman of a committee of five, on reception and arrangements, he to appoint the other members of the committee. Gen. C. H. Barney of New York was appointed chairman of a committee of three on electrical exhibits and transportation, he to appoint the other members of the committee. The committee on papers reported the following as promised, and stated that the prospects of securing two or three more important papers are most excellent (announcements of these will be made later): "How can the National Electric Light Association best serve Central Station Interests?" by C. R. Huntley, discussion by A. M. Young; "Distribution of Steam from a Central Station," by F. H. Prentiss, discussion by George H. Babcock; "Distribution and Care of Alternating Currents," by T. Carpenter Smith, discussion by G. H. Blaxter; "Municipal Control of Electric Railroads," by M. W. Mead, discussion by M. J. Francisco; "The Ferranti System," by C. B. Haskins, discussion by C. L. Edgar. The committee has not only secured the promise of these papers, but has gone a step further, and named a person to open the discussion on each paper. This must inevitably tend to bring out the best points of the topic, and to greatly add to the interest in and value of the proceedings.

— If we were to judge by statistics alone, says *Nature* of Oct. 16, we should be forced to conclude that the present system of granting rewards for the destruction of wild animals in India has had little or no effect in diminishing their numbers or in decreasing the mortality caused by them. This conclusion, however, would not be in accordance with facts. The methods according to which the statistics are collected have been so much improved, that no deduction can safely be made from the figures available. This is pointed out in a recent report of the Revenue Department of the Government of Madras. The report continues, "The experience of almost every district officer who has been some years in the country would be that the number of destructive wild animals had largely decreased with the advance of cultivation and the progress of railways, and the evidence of natives would probably be the same. There are parts of the country still, where, owing to the existence of forest and difficulty of access, wild animals of prey continue to exist in large numbers; and it is the case, that, owing to various causes, Europeans, at all events, do less now in the way of killing large game than formerly was the case. They have less time to spare from their official duties, and less money to spend. It can hardly, however, be doubted, that, owing to the existence of the system of granting rewards for animals slain, native shikaris are encouraged to maintain a profession which otherwise probably they would give up from want of support; and for this reason, if for no other, the board would not wish to see at present any change made in the system of granting re-